# Администрирование сетевых подсистем

Лабораторная работа №11

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# Цель работы

# Основная цель

Приобретение практических навыков по настройке безопасного удалённого доступа к серверу по протоколу SSH.

# Ход выполнения

# Попытка входа под root

# Настройка запрета root-доступа

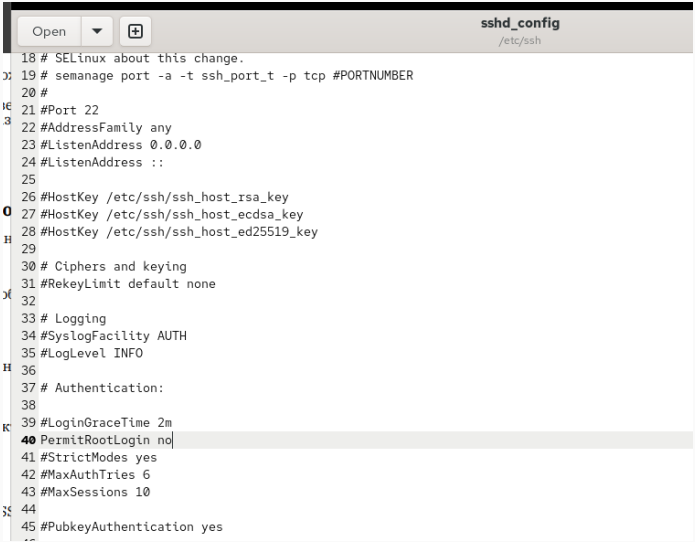





**Рис. 2:** sshd_config — запрет root

# Проверка после запрета

```
[dgavdadaev@client.dgavdadaev.net ~]$
[dgavdadaev@client.dgavdadaev.net ~]$ ssh root@server.dgavdadaev.net
root@server.dgavdadaev.net's password:
Permission denied, please try again.
root@server.dgavdadaev.net's password:
Permission denied, please try again.
root@server.dgavdadaev.net's password:
root@server.dgavdadaev.net: Permission denied (publickey,gssapi-keyex,gssapi-wit
h-mic,password).
[dgavdadaev@client.dgavdadaev.net ~]$
```

Рис. 3: Отказ после запрета root

# Успешный вход обычного пользователя

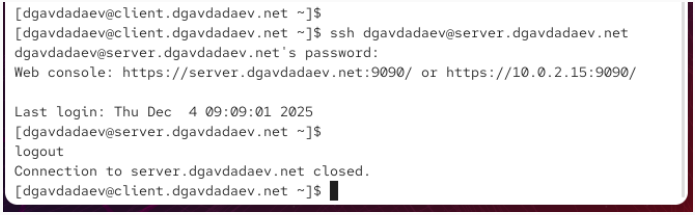
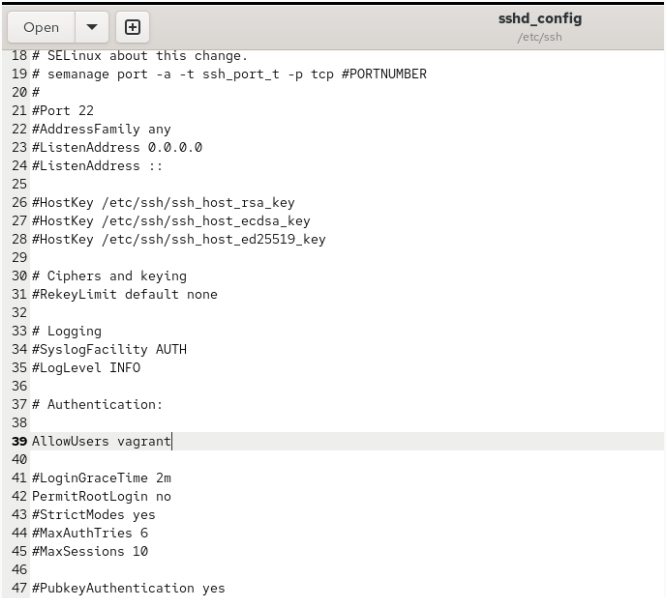



**Рис. 4:** Успешный вход пользователя

# Настройка AllowUsers



# Блокировка пользователя dgavdadaev

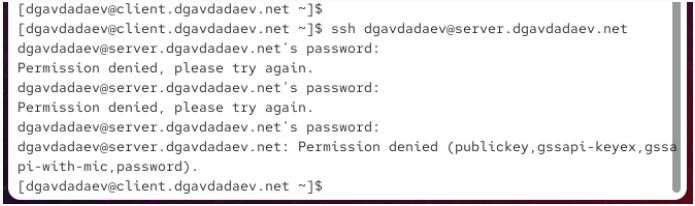
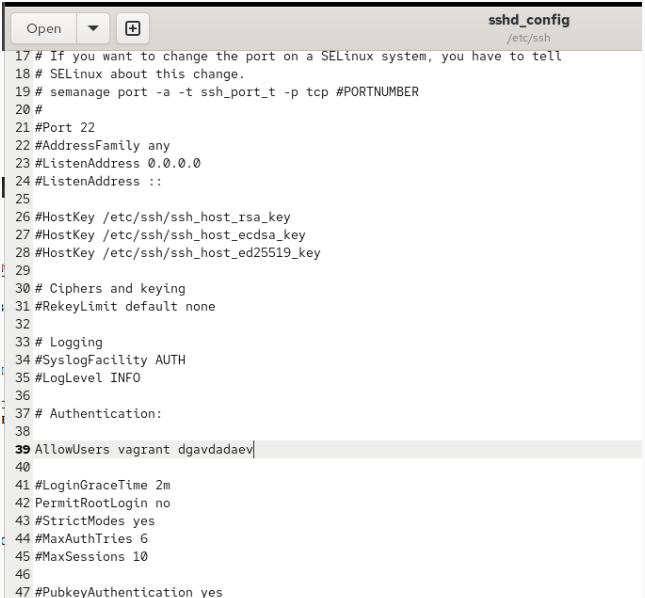



**Рис. 6:** Отказ пользователя dgavdadaev

# Расширение AllowUsers



# Расширение AllowUsers

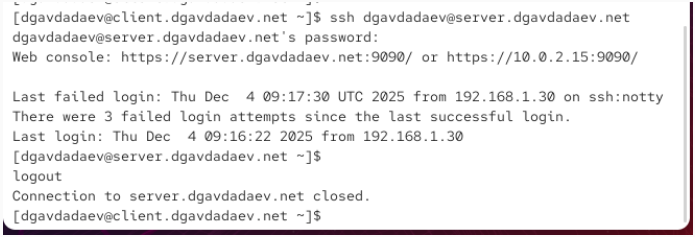



**Рис. 8:** Успешный вход

# Добавление второго порта

Open

**sshd_config**
/etc/ssh

```
#  /etc/ssh/sshd_config.d/  which will be automatically included below
Include /etc/ssh/sshd_config.d/*.conf

# If you want to change the port on a SELinux system, you have to tell
# SELinux about this change.
# semanage port -a -t ssh_port_t -p tcp #PORTNUMBER
#
Port 22
Port 2022
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

AllowUsers vagrant dgavdadaev

#LoginGraceTime 2m
PermitRootLogin no
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes
```

# Ошибка SELinux

```
[root@server.dgavdadaev.net ~]#
[root@server.dgavdadaev.net ~]# systemctl restart sshd
[root@server.dgavdadaev.net ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Thu 2025-12-04 09:20:26 UTC; 6s ago
 Invocation: c2de27b36b71414899d3f81139 3c1cd9
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 15687 (sshd)
      Tasks: 1 (limit: 10278)
     Memory: 1.3M (peak: 1.5M)
        CPU: 4ms
     CGroup: /system.slice/sshd.service
             └─15687 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Dec 04 09:20:26 server.dgavdadaev.net systemd[1]: Starting sshd.service - OpenSSH server daemon...
Dec 04 09:20:26 server.dgavdadaev.net sshd[15687]: error: Bind to port 2022 on 0.0.0.0 failed: Permission denied.
Dec 04 09:20:26 server.dgavdadaev.net sshd[15687]: error: Bind to port 2022 on :: failed: Permission denied.
Dec 04 09:20:26 server.dgavdadaev.net systemd[1]: Started sshd.service - OpenSSH server daemon.
Dec 04 09:20:26 server.dgavdadaev.net sshd[15687]: Server listening on 0.0.0.0 port 22.
Dec 04 09:20:26 server.dgavdadaev.net sshd[15687]: Server listening on :: port 22.
[root@server.dgavdadaev.net ~]#
```

## Разрешение порта в SELinux и firewall

```
[root@server.dgavdadaev.net ~]# semanage port -a -t ssh_port_t -p tcp 2022
[root@server.dgavdadaev.net ~]# firewall-cmd --add-port=2022/tcp
success
[root@server.dgavdadaev.net ~]# firewall-cmd --add-port=2022/tcp --permanent
success
[root@server.dgavdadaev.net ~]# systemctl restart sshd
[root@server.dgavdadaev.net ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Thu 2025-12-04 09:22:20 UTC; 4s ago
 Invocation: 516b008aba1d411faa60dbdd5f625917
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 15982 (sshd)
```

# Подключение по порту 2022

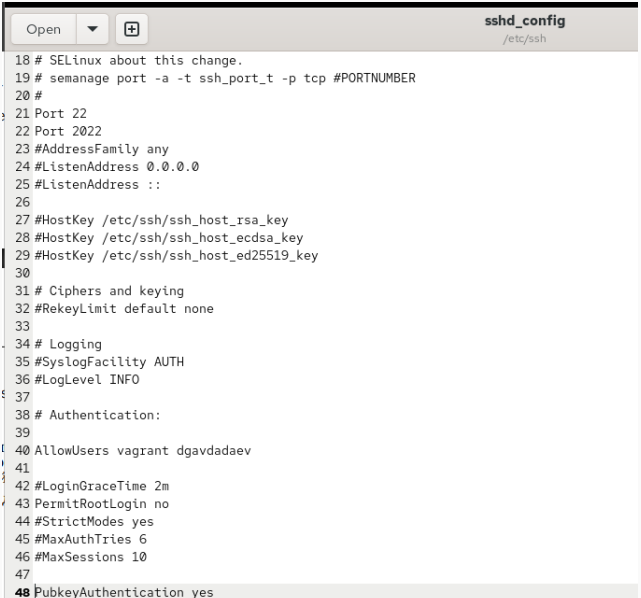
```
[dgavdadaev@client.dgavdadaev.net ~]$ ssh dgavdadaev@server.dgavdadaev.net
dgavdadaev@server.dgavdadaev.net's password:
Web console: https://server.dgavdadaev.net:9090/ or https://10.0.2.15:9090/

Last login: Thu Dec  4 09:18:43 2025 from 192.168.1.30
[dgavdadaev@server.dgavdadaev.net ~]$ sudo -i
[sudo] password for dgavdadaev:
[root@server.dgavdadaev.net ~]#
logout
[dgavdadaev@server.dgavdadaev.net ~]$
logout
Connection to server.dgavdadaev.net closed.
[dgavdadaev@client.dgavdadaev.net ~]$
[dgavdadaev@client.dgavdadaev.net ~]$ ssh dgavdadaev@server.dgavdadaev.net -p2022
dgavdadaev@server.dgavdadaev.net's password:
Web console: https://server.dgavdadaev.net:9090/ or https://10.0.2.15:9090/

Last login: Thu Dec  4 09:22:49 2025 from 192.168.1.30
[dgavdadaev@server.dgavdadaev.net ~]$ sudo -i
[sudo] password for dgavdadaev:
[root@server.dgavdadaev.net ~]#
logout
[dgavdadaev@server.dgavdadaev.net ~]$
logout
Connection to server.dgavdadaev.net closed.
[dgavdadaev@client.dgavdadaev.net ~]$
```

**Рис. 11:** Подключение по 2022

# Включение PubkeyAuthentication



# Вход без пароля

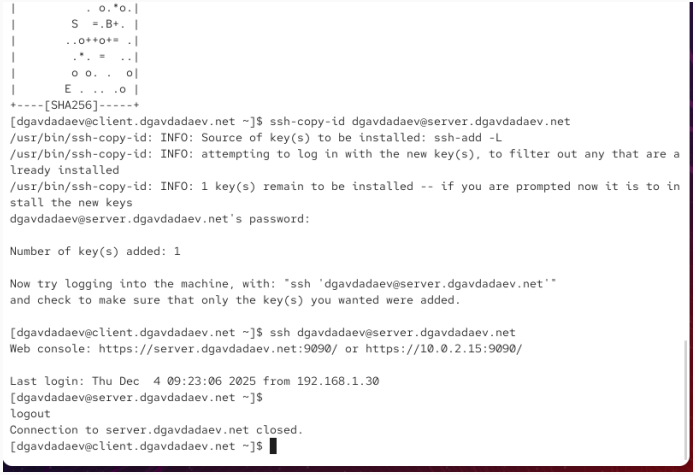



**Рис. 13:** Безпарольный вход

# Создание туннеля

**Рис. 14:** TCP после туннеля

# Проверка в браузере

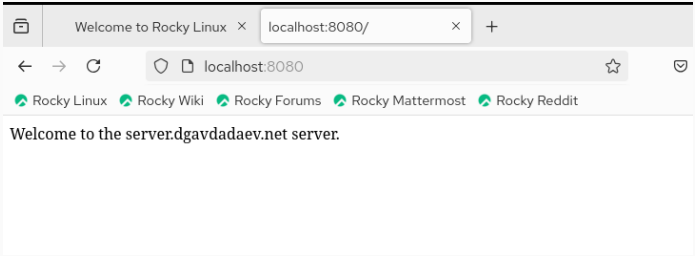



Рис. 15: localhost:8080

# Команды по SSH

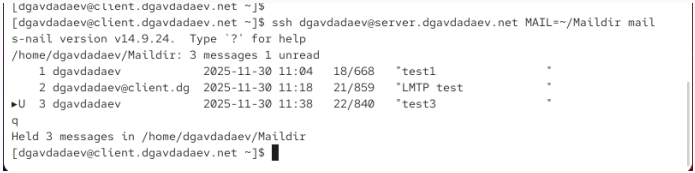
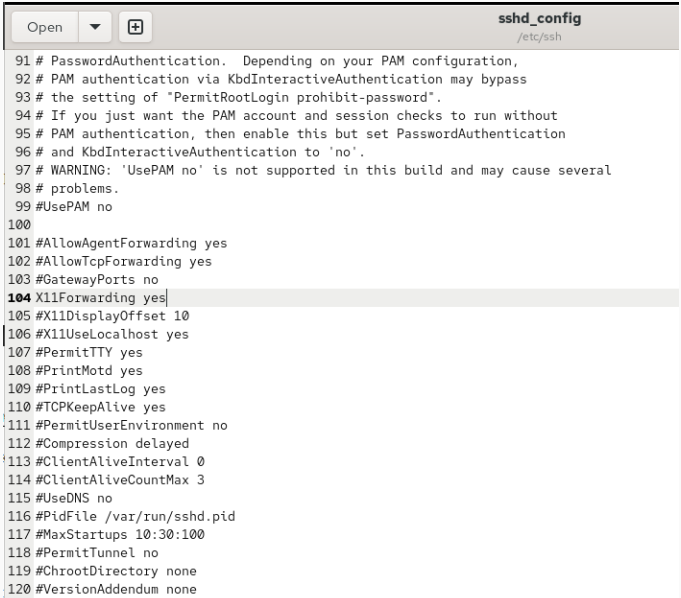



**Рис. 16:** Просмотр почты

# Включение X11Forwarding



# Ошибка при запуске Firefox

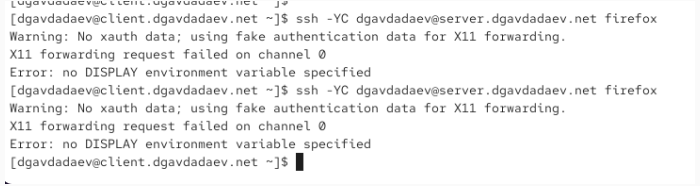



**Рис. 18:** Ошибка Firefox

# Скрипт ssh.sh

Vagrantfile | ssh.sh

```
#!/bin/bash
echo "Provisioning script $0"
echo "Copy configuration files"
cp -R /vagrant/provision/server/ssh/etc/* /etc
restorecon -vR /etc
echo "Configure firewall"
firewall-cmd --add-port=2022/tcp
firewall-cmd --add-port=2022/tcp --permanent
echo "Tuning SELinux"
semanage port -a -t ssh_port_t -p tcp 2022
echo "Restart sshd service"
systemctl restart sshd
```

**Рис. 19:** ssh.sh

# Вывод

# Итоги работы

- Запрещён вход root
- Ограничены доступные пользователи
- Настроены несколько портов SSH
- Разрешён нестандартный порт в SELinux/firewalld
- Настроена аутентификация по ключам
- Созданы SSH-туннели
- Изучены консольные и графические приложения SSH